

# AMIGA® TROUBLESHOOTER

A simple-to-use symptomatic guide for diagnosing  
faulty IC components on Amiga computers  
(Includes all version of the A500/1500/2000/2500)

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AMIGA®

SERIAL NUMBER

5124

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## PART 1: A500 QUICK CHECK

| SYMPTOMS                            | COMPONENTS | U1 68000 | U6 ROM | U2 FAT AGNUS | U4 DENISE | U3 PAULA | U5 GARY | U7 8520 | U8 8520 | U15 74LS157 | U14 LF347 | HY1 VIDEO HY1 RD | U40 74HCT 245 | U41 74HCT 245 | U37 74LS32 | U38 1488 | U39 1489 | D RAMS | POWER SUPPLY | K. BOARD 6570 | EMI 1301 1ohm Res | EMI 1401 5.1ohm Res | EMI 1501 47ohm Res | U2 SOCKET | X1 CRYSTAL |  |  |
|-------------------------------------|------------|----------|--------|--------------|-----------|----------|---------|---------|---------|-------------|-----------|------------------|---------------|---------------|------------|----------|----------|--------|--------------|---------------|-------------------|---------------------|--------------------|-----------|------------|--|--|
| BLANK SCREEN BLACK                  | ●          |          |        | ●            |           |          |         |         |         |             |           |                  |               |               |            |          |          | ●      |              |               |                   |                     |                    | ●         | ●          |  |  |
| BLANK SCREEN GREEN                  |            |          | ●      |              |           | ●        |         |         |         |             |           |                  |               |               |            |          |          | ●      |              |               |                   |                     |                    | ●         |            |  |  |
| BLANK SCREEN WHITE                  |            |          | ●      |              | ●         |          | ●       |         |         |             |           |                  |               |               |            | ●        |          |        |              | ●             |                   |                     |                    | ●         |            |  |  |
| BLANK SCREEN RED                    | ●          |          |        |              |           |          |         |         |         |             |           |                  |               |               |            |          |          |        |              |               |                   |                     |                    |           |            |  |  |
| GRAPHICS PROBLEMS                   |            |          | ●      | ●            |           |          |         |         |         |             |           |                  |               |               |            |          |          |        |              |               |                   |                     |                    |           | ●          |  |  |
| SYSTEM LOCKS-UP FREEZES             |            |          | ●      | ●            |           |          | ●       |         |         |             |           |                  |               |               |            | ●        |          |        |              |               |                   |                     |                    |           |            |  |  |
| NO KEYBOARD RESET CTRL: AMIGA AMIGA |            |          |        |              | ●         |          |         |         |         |             |           |                  |               |               |            |          |          |        | ●            |               |                   |                     |                    |           |            |  |  |
| WAVY SCREEN NO SYNC                 |            | ●        |        |              |           |          |         |         |         |             |           |                  |               |               |            | ●        |          |        |              |               |                   |                     |                    |           |            |  |  |
| WRONG COLORS                        |            |          | ●      |              |           |          |         |         |         |             |           | ●                |               | ●             | ●          |          |          |        |              |               |                   |                     |                    |           |            |  |  |
| JOYSTICK PROBLEMS                   |            |          | ●      |              |           |          |         |         |         |             |           | ●                |               |               |            |          |          |        |              |               |                   |                     |                    |           |            |  |  |
| MOUSE PROBLEMS                      |            |          | ●      | ●            |           | ●        |         | ●       |         |             |           |                  |               |               |            |          |          |        |              |               |                   |                     |                    | ●         |            |  |  |
| NO FIRE BUTTON                      |            |          |        |              |           | ●        |         |         |         |             |           |                  |               |               |            |          |          |        |              |               |                   |                     |                    |           |            |  |  |
| NO RIGHT MOUSE BUTTON               |            |          |        |              | ●         |          |         |         |         |             |           |                  |               |               |            |          |          |        |              |               |                   |                     |                    |           |            |  |  |
| AUDIO FAULTS                        |            |          |        | ●            |           |          |         |         |         |             | ●         |                  |               |               |            |          |          |        |              |               |                   |                     |                    |           |            |  |  |
| DISK DRIVE FAULTS                   | ●          |          | ●      |              | ●         | ●        | ●       | ●       | ●       |             |           |                  |               |               |            |          |          |        |              |               |                   |                     |                    |           |            |  |  |
| KEYBOARD TROUBLE                    |            |          | ●      |              |           | ●        | ●       |         |         |             |           |                  |               |               |            |          |          |        |              |               |                   |                     |                    |           |            |  |  |
| SERIAL PORT TROUBLE                 |            |          |        |              |           | ●        |         |         | ●       |             |           |                  |               |               |            |          | ●        | ●      |              |               |                   |                     |                    |           |            |  |  |
| PARALLEL PORT TROUBLE               |            |          |        |              |           |          |         |         | ●       | ●           |           |                  |               |               |            |          |          |        |              |               |                   |                     |                    | ●         |            |  |  |

NOTE 1: Remove all external add ons: extra memory, hard drive, external disk drive, printer, modem. This eliminates them as a source of the problem. If computer works normally when all add ons have been removed, start adding devices on, one at a time, until the problem comes back. Then determine which is at fault, the device or the computer.

NOTE 2: Substitute a known good disk drive and power supply so as to to eliminate them as the source of the problem.

Disclaimer: I hereby disclaim any responsibility for the accuracy of the information on this chart and disclaim all liability for the use thereof. This chart is supplied as an adjunct to Amiga computer users. It is intended to assist in isolating a faulty chip and is to be used by persons experienced in the repair of computers and computer related devices.

## PART 2: AMIGA TROUBLESHOOTER (A500/2000)

### POWER UP SEQUENCE

- About 1/2 second delay
- Disable and clear all interrupts
- Dark gray screen
- If ROM bad, screen red
- Temporary exception processing: If artificial exception occurs, screen yellow.
- Configure memory: If bad, screen green.
- Custom IC registers: If bad, screen blue.
- Restore screen change to light gray, then workbench prompt.

### POWER UP PROBLEMS

#### 1. No workbench prompt:

Screen goes from dark gray to light gray but does not display Workbench prompt. Most probable causes are:

- 8520 U7 Odd CIA (U300 A-2000)
- 8364 U3 Paula (U200 A-2000)
- EMI 1301 1 ohm resistor (R 309 Rev. 6A/7 boards; R200 A-2000)
- 8370 - 8372/8375 U2 Fat Agnus (U101 A-2000)
- 74LS32 U37 (chip select) U302 A-2000
- U2 socket

#### 2. No power up (black screen):

- Substitute a known good power supply to eliminate it as a possible source of the problem.
- 68000 U1 (Check for excessive heat. If it is too hot to touch, it is bad.) (U100 A-2000)
- 8370 - 8372/8375 U2 (U101 A-2000)
- X1 Crystal (no clocks)

#### 3. Green screen:

- 8370-8372/8375 U2 (U101 A-2000)
- 501 or similar RAM expansion
- 5719 U5 Gary (U102 A-2000)
- RAM on mother board (Check for excessive heat. If it is too hot to touch, it is bad.)
- U2 socket (U101 A-2000)

### A500/2000 KEYBOARD

#### 1. If the caps lock light on the keyboard is flashing when you power up, note the number of times it flashes:

- 1 flash 6570-036 keyboard controller
- 2 flashes 6570-036 keyboard controller
- 3 flashes 555/74LS123/74LS27

The above chips are located on the keyboard. If you cannot reset computer [control-amiga-amiga], the most probable cause is Q2. The next most likely cause, 74LS27.

#### 2. If the keyboard is determined not to be the problem, the defect is most likely on the main PCB [A-500 mother board or A-2000]. The most problematic chips are:

- U7 Odd CIA [KBdata Pin 39 - KBClock Pin 40] (U300 A-2000)
- 8370 - 8372/8375 (U101 A-2000)
- 5719 Gary U5 (U102 A-2000)
- R914 1 ohm 1/2 watt resistor A-2000 (supplies 5 volts to keyboard).

### MOUSE OR JOYSTICK PROBLEMS

A known good mouse and joystick should be used to eliminate them as the source of the problem. If it is determined that the mouse and joystick are okay, the most likely causes are:

1. Mouse does not move, left and right mouse buttons okay, joystick okay:
  - EMI 1401 5.1 ohm resistor (supplies 5 volts to mouse). A-2000 Rev. 6 and up: F1 4 amp pico fuse.
  - 8362 U4 (U201 A-2000)
  - 74LS157 U15 (U202 A-2000)
2. Mouse or joystick not working:
  - 74LS157 U15 (U202 A-2000)
  - 8362 U4 (U201 A-2000)
  - 74F04 U33 (U107 A-2000)
3. Left mouse button and fire button on joystick not working:
  - 8520 U7 Odd CIA (U300 A-2000)
4. Right mouse button not working:
  - 8364 U3 Paula (U200 A-2000)

### VIDEO PROBLEMS

#### 1. Screen breaks up (scrambles) after running for 15 to 30 minutes.

Probable causes are:

- 8370 - 8372/8375 U2 Fat Agnus (U101 A-2000)
- 8362 U4 Denise (U201 A-2000)
- U2 Socket (U101 A-2000)

#### 2. System locks up when double clicking on icon:

- 8370/8375 U2 (U101 A-2000)

- 8362 U4 (U201 A-2000)
- 8520 U7 Odd CIA (U300 A-2000)
- 74LS32 U37 (U302 A-2000)

3. Scrambled video loss of composite sync.:
  - 8370 - 8372/8375 U2 (U101 A-2000)
  - 74HC245 U41 (74HCT244 U205 A-2000)
  - RP403
4. Incorrect color (loss of red, green or blue):
  - 8362 U4 (U201 A-2000)
  - 74HC245 U40-U41 (74HCT244 U205-U206 A-2000)
  - Video Hybrid
5. No video (black screen):
  - R405 4.7 ohm resistor
  - R406 4.7 ohm resistor
  - 8362 U4 (U201 A-2000)
  - Video Hybrid
  - 74HC245 U40-U41 (74HCT244 U205-U206 A-2000)

### SERIAL PORT PROBLEMS

#### 1. Modem will not transmit. Most likely causes are:

- 1488 U38 (transmit) (U304 A-2000)
- 8364 U3 Paula (U200 A-2000)
- 8520 U8 Even CIA (U301 A-2000)

#### 2. Modem or serial port will not receive:

- 1489 (receive) U305 A-2000
- 8364 U3 Paula (U200 A-2000)
- 8520 U8 Even CIA (U301 A-2000)

NOTE: Computer will function with no -12 volts but serial port will not work.

### PARALLEL PORT PROBLEMS

A known good printer should be substituted to eliminate it as the source of the problem.

#### 1. Printer not working correctly or not working at all. The most likely causes are:

- 8520 U8 Even CIA (U301 A-2000)
- EMI 1501 47 ohm resistor (R318 A-2000)

#### 2. Prints incorrectly:

- 8520 U7 Odd CIA (U300 A-2000)

### DISK DRIVE PROBLEMS

Clean heads and check for excess dust in drive. Clean out dust and try again. This may eliminate the problem. In the following tests, a known good drive should be substituted to eliminate the drive as the source of the problem.

#### 1. Internal/external drive not recognized. Probable causes:

- 8520 U8 Even CIA (U301 A-2000)
- F4 4 amp pico fuse bad (A-2000)
- F3 4 amp pico fuse bad (A-2000)

#### 2. Motor problem:

- 8520 U8 Even CIA (U301 A-2000)
- 5719 U5 Garry (U102 A-2000)
- 74LS38 U36 (U203 A-2000)

#### 3. Not recognizing disk change:

- 8520 U7 Odd CIA (U300 A-2000)

#### 4. Write protect problems:

- 8520 U7 Odd CIA (U300 A-2000)

#### 5. Read/Write errors:

- 8364 Paula U3 (U200 A-2000)
- 68000 U1 (U100 A-2000)
- 8370-8372/8375 U2 (U101 A-2000)

#### 6. DF1 A2000 not recognized:

- J301 open (must have jumper installed)
- 8520 U301
- 74F04 U900
- 74LS74 U108

### AUDIO PROBLEMS

Problem with left, right or both channels:

- 8364 U3 Paula (U200 A-2000)
- LF347/LT084 OP-amp U14 (U204 A-2000)
- Q331 or Q321 F.E.T. (Q200 or Q201 A-2000)
- CN3 or CN4 (cold solder connection) (CN205-CN-204 A-2000)
- EMI 1303 or 1302 (R243-R233 1k ohm A-2000)
- Bad connecting cable